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BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

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In the Matter of the Application of Duke Energy Ohio, Inc., for Approval of an Electric Security Plan.)	PUCO
)	Case No. 08-920-EL-SSO
)	
In the Matter of the Application of Duke Energy Ohio, Inc., for Approval to Amend Accounting Methods.)	Case No. 08-921-EL-AAM
)	
In the Matter of the Application of Duke Energy Ohio, Inc., for Approval of a Certificate of Public Convenience and Necessity to Establish an Unavoidable Capacity Charge(s).)	Case No. 08-922-EL-UNC
)	
In the Matter of the Application of Duke Energy Ohio, Inc., for Approval to Amend its Tariff.)	Case No. 08-923-EL-ATA
)	

DIRECT TESTIMONY OF KEVIN M. MURRAY
ON BEHALF OF INDUSTRIAL ENERGY USERS-OHIO

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October 27, 2008

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Certificate of Service

Exhibit I - Average Retail Prices of Electricity, 1960-2007

Exhibit II - Average Power Plant Operating Expenses for Major
U.S. Investor-Owned Electric Utilities, 1995 through 2006

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**DIRECT TESTIMONY OF KEVIN M. MURRAY
ON BEHALF OF INDUSTRIAL ENERGY USERS-OHIO**

1 I. INTRODUCTION

2 Q1. Please state your name and business address.

3 A1. My name is Kevin M. Murray. My business address is 21 East State Street, 17th
4 Floor, Columbus, Ohio 43215-4228.

5 Q2. By whom are you employed and in what position?

6 A2. I am a Technical Specialist for McNees Wallace & Nurick LLC ("McNees"),
7 providing testimony on behalf of Industrial Energy Users-Ohio ("IEU-Ohio").

8 Q3. Please describe your educational background.

1 A3. I graduated from the University of Cincinnati in 1982 with a Bachelor of Science
2 degree in Metallurgical Engineering.

3 **Q4. Please describe your professional experience.**

4 A4. I have been employed by McNees for eleven years where I focus on helping IEU-
5 Ohio members address issues that affect the price and availability of utility
6 services. I have also been active on behalf of industrial customers in the
7 formation of regional transmission operators and the organization of regional
8 electricity markets. Prior to joining McNees I was employed by Kegler, Brown,
9 Hill & Ritter in a similar capacity. I previously spent twelve years with The
10 Timken Company, a specialty steel and roller bearing manufacturer. While at
11 The Timken Company, I worked within a group that arranged for electricity and
12 natural gas requirements for facilities in the United States. I also spent several
13 years in supervisory positions within the company's steelmaking operations.

14 **Q5. Have you previously testified before this Commission?**

15 A5. I have previously submitted testimony in the Ohio Edison Company, The
16 Cleveland Electric Illuminating Company, and The Toledo Edison Company
17 (collectively "FirstEnergy" or "Companies") electric distribution companies' rate
18 increase cases which are pending before the Commission (Case Nos. 07-551-
19 EL-AIR, *et al.*). However, on February 11, 2008, a Stipulation and
20 Recommendation supported by many of the parties in those proceedings was
21 submitted. The Stipulation and Recommendation, if adopted, would resolve
22 many of the contested issues in the proceedings. A provision in the Stipulation

1 and Recommendation provides that my testimony in those proceedings will not
2 be offered.

3 I have also submitted direct testimony in FirstEnergy's application for approval of
4 a competitive bidding process in Case No. 08-936-EL-SSO as well as its
5 application for approval of an electric security plan ("ESP") in Case No. 08-935-
6 EL-SSO.

7 **Q6. What is the purpose of your testimony?**

8 A6. The purpose of my testimony is to address changes that are necessary to Duke
9 Energy Ohio, Inc.'s ("Duke") proposed ESP in order to make the overall plan
10 reasonable and more favorable in the aggregate than a market rate option
11 ("MRO"). First, the application does not substantively address how customer-
12 sited capabilities to meet demand response, energy efficiency and peak demand
13 reduction obligations will be incorporated into the ESP. Second, Duke is
14 requesting authority to transfer its generating assets to a non-regulated affiliate.
15 The Commission should not approve Duke's request. Third, Duke is requesting
16 an automatic annual increase of three percent in each year of the ESP in its base
17 generation rates (Rider PTC-IA). Duke has failed to demonstrate that this
18 increase is necessary or reasonable. Fourth, Duke is requesting an immediate
19 increase of \$9 per MWh in its base generation rates, and has suggested that this
20 increase is appropriate to compensate Duke for the market value of its
21 generating capacity. Duke's request ignores the fact that the existing IMF rider,
22 which will become the SRA-CD under Duke's ESP proposal, was explicitly
23 created to compensate Duke for dedicating its generating capacity. Fifth, Duke is

1 requesting approval for several riders to compensate Duke for the dedication of
2 purchased or new capacity to serve Ohio customers and provide a 15% level of
3 planning reserves for Duke's entire load. If approved, these riders should be fully
4 avoidable by shopping customers. Alternatively, if shopping customers will be
5 subject to these riders, customers (or competitive retail suppliers with the
6 customer's consent) should be able to point to the capacity assets owned or
7 controlled by Duke for the purposes of satisfying planning reserve requirements
8 of the Midwest ISO ("MISO"). Sixth, Duke's proposal to collect the estimated \$9
9 million in development costs associated with an electronic bulletin board through
10 a distribution cost rider is an impermissible use of subsidy flowing from a
11 regulated to a competitively-priced service. Finally, Duke's request to enter into
12 30-year purchase agreements for approximately 1400 MW of capacity should not
13 be approved.

14 II. CUSTOMER-SITED CAPABILITIES

15 **Q7. What are customer-sited demand response, energy efficiency and peak**
16 **demand capabilities?**

17 **A7.** It is my understanding that these customer-sited capabilities are means an
18 electric distribution utility ("EDU") may use to comply with the portfolio
19 requirements of Amended Substitute Senate Bill 221 ("SB 221") beginning in
20 2009.

1 **Q8. How is compliance with these requirements measured?**

2 A8. It is my understanding that compliance is addressed in SB 221 both directly and

3 by giving the Commission the ability to issue rules. The Commission recently

4 issued draft rules on the portfolio requirements.

5 **Q9. How should EDU's treat customer-sited capabilities for the purposes of**

6 **providing the Standard Service Offer ("SSO") in conjunction with the ESP?**

7 A9. It is my understanding that the portfolio requirements apply to an EDU regardless

8 of whether the SSO is provided under the MRO or ESP approach and that SB

9 221 encourages the use of customer-sited capabilities to meet these

10 requirements in both an MRO and ESP context.

11 **Q10. Does Duke's ESP application address how customer-sited capabilities will**

12 **be used to meet its portfolio obligations?**

13 A10. No, it does not specifically address this issue. Duke has identified a number of

14 energy efficiency initiatives that it proposes to offer under the umbrella of its

15 proposed Save-A-Watt program. Duke believes these measures will suffice to

16 meet its portfolio obligations during the three year term of its ESP. However, the

17 application does not discuss how customer-sited capabilities will be addressed.

18 **Q11. Is the information contained in the application adequate?**

19 A11. No, it is not. Duke has failed to address how customer-sited capabilities will be

20 relied upon.

1 **III. GENERATION ASSET TRANSFER**

2 **Q12. Does the application request Commission approval to transfer generation**
3 **assets?**

4 A12. Yes, it does. The direct testimony of James B. Gainer discusses Duke's
5 requested approval. Duke categorizes its generating assets into two
6 classifications. The first category consists of assets that, according to Duke,
7 were used and useful in the provision of retail electric service in Duke's Ohio
8 service area prior to January 1, 2001. The second category of generating assets
9 consists of the gas-fired plants acquired by Duke as a result of the merger
10 between Cinergy and Duke Energy in 2006. Duke also includes the Ohio Valley
11 Electric Corporation coal plants in this second category. Duke believes that
12 transferring these assets will enhance the competitive retail electric service
13 market.

14 **Q13. Should the Commission approve Duke's request?**

15 A13. No, not as proposed in the application. With respect to the second category of
16 assets, Duke has not been exclusively relying upon these assets to serve Ohio
17 customers. In fact, there were restrictions adopted associated with Duke's rate
18 stabilization plan on how and when Duke could utilize these assets to serve Ohio
19 customers. Given this history, it could be reasonable, in the context of its overall
20 evaluation of an ESP proposal, for the Commission to approve the transfer of
21 these assets, although it is my understanding the Commission is not compelled
22 to approve any transfer of generating assets. However, with respect to the first

category of assets, the Commission should not approve the generation asset transfer.

Q14. What would happen if the Commission approved Duke's request to transfer its generating assets?

A14. It is my understanding that the Commission would have limited jurisdiction over the generating assets. The prices at which the generating assets would be permitted to sell power would be regulated by the Federal Energy Regulatory Commission ("FERC"). This could, as a practical matter, negate or eliminate the ESP option created by SB 221.

IV. AUTOMATIC ANNUAL INCREASES

Q15. Is Duke requesting automatic annual increases in its generation price as part of its application?

A15. Yes. In his testimony, Paul G. Smith identifies that the company is proposing Rider PTC-IA as part of its application. Rider PTC-IA will escalate the base generation price, which is reflected in Rider PTC-BG, by 3% annually beginning January 1, 2010. Duke is proposing Rider PTC-IA to mitigate the impact of future inflation.

Q16. Has Duke provided any information in support of its proposed 3% automatic annual increase?

A16. Mr. Smith states that the proposed 3% increase is lower than recent inflation data. Part B of Schedule I was provided to support this statement. Part B of Schedule I lists the Producer Price Index ("PPI") increasing by 39.4% between

1 the years 1994 and 2007, which is an average annual increase of 2.4%. Part B
2 of Schedule I also provides the PPI for select industries (iron and steel mills,
3 sheet metal manufacturing, industrial values, petroleum refineries, and
4 pharmaceutical) which is shown as having a combined PPI increase between
5 1994 and 2007 of 83.25%, which is an average annual increase of 4.4%.

6 **Q17. Do you believe the PPI references justify Duke's 3% automatic annual**
7 **increases?**

8 A17. No, I do not. First, as shown on Part B of Schedule I, the overall PPI between
9 1994 and 2007 increases by 2.4%, which is less than Duke's requested annual
10 increase. Second, the selection of five industries that experienced an average
11 annual PPI increase of 4.4% during this period is arbitrary. Duke has not
12 demonstrated that there is any nexus between costs in these industries and
13 costs within the electric utility sector.

14 More fundamentally, the use of the PPI as a cost reference is not appropriate
15 given the structure of Duke's proposed ESP. The PPI provides a measurement
16 of overall changes in costs. For electric utilities, it would reflect the influences of
17 changes in, among other things, fuel costs. Thus, it is theoretically possible for
18 some or a significant portion of the PPI increase or decrease for electric utilities
19 to be driven by changes in fuel costs.

20 In its application, Duke is proposing to isolate all fuel costs and recover 100% of
21 these costs through Rider FPP.¹ Thus, any comparison to PPI values that

¹ Duke is also proposing to flow through other costs beyond fuel through other riders.

1 reflects overall costs is not an appropriate reference or proxy for base generation
2 costs.

3 **Q18. Are there more appropriate indexes that reflect trends in generation costs?**

4 A18. Yes, there are. Attached to my testimony as Exhibit I is a table obtained from the
5 Energy Information Agency, which is an office of the U. S. Department of Energy.
6 It lists national average retail electricity prices between 1960 and 2007. Between
7 1994 and 2007, it shows that retail prices fell from 7.66 cents per kWh to 7.64
8 cents per kWh.

9 Attached to my testimony as Exhibit II is an additional table obtained from the
10 Energy Information Agency. It lists average power plant operating expenses for
11 major U.S. investor-owned utilities between 1995 and 2006. The table provides
12 a breakout of expenses classified between operation, maintenance and fuel
13 costs. The table shows that for fossil steam plants, total costs during this period
14 increased from 21.11 mills per kWh to 29.59 mills per kWh, an increase of 8.59
15 mills. However, fuel costs for fossil steam plants were responsible for 7.1 mills of
16 the increase, with only small increases in operation and maintenance costs. For
17 gas turbine and small scale facilities, total costs during this period increased from
18 28.67 mills per kWh to 57.75 mills per kWh, an increase of 29.08 mills. However,
19 fuel costs for turbine and small scale plants increased by 31.63 mills during this
20 period, while operation and maintenance costs actually decreased.

1 **Q19. What do you conclude based upon this information?**

2 A19. I conclude that Duke has failed to demonstrate that any increase in base
3 generation rates is necessary during the three year ESP term to mitigate
4 inflation.

5 **V. BASE GENERATION INCREASE**

6 **Q20. Has Duke requested an immediate increase in its base generation rates?**

7 A20. Yes. Duke is proposing a \$9 per MWh increase to Rider PTC-BG, effective
8 January 1, 2009.

9 **Q21. Why does Duke believe a \$9 per MWh increase is justified?**

10 A21. Paul G. Smith discusses three reasons for the increase. First, he indicates that
11 the company's base generation rate has not increased since 1993 and
12 inflationary pressure (citing to Part B, Schedule 1) has occurred during this
13 period. Second, Duke believes it should receive full market value compensation
14 for its generating capacity. Third, Duke is proposing to dedicate existing 2009,
15 2010 and 2011 coal purchases to its SSO load, and the company believes that
16 with the recent rise in coal prices, these purchase agreements have value.

17 **Q22. Do you agree that a \$9 per MWh increase is appropriate?**

18 A22. No. First, as I have already discussed, the fact the PPI has increased between
19 1994 and 2007 is irrelevant. Second, Duke's belief that it should receive full
20 market value for its generating capacity seems to be an indirect ploy to capture
21 some of the potential benefits of the MRO under SB 221, but to avoid the other

1 requirements that accompany the MRO. Lastly, the value of the coal contracts
2 relative to prevailing market prices will be a matter that can be definitely
3 ascertained after the ESP has run its course, as coal costs, like other fuel costs,
4 can escalate up and down. Duke has proposed to automatically flow through
5 100% of all fuel costs through Rider FPP. It is my understanding that SB 221
6 requires automatic recovery of fuel costs to be linked to a demonstration of
7 prudence. The implicit suggestion in Duke's coal contract value proposition,
8 which is that Duke would go to market to obtain coal supplies necessary to serve
9 its SSO load, rather than rely upon lower coal supplies already under contract,
10 would raise questions of prudence.

11 Further, currently all customers are subject to Rider IMF. This rider was created
12 as part of Duke's rate stabilization plan in order to compensate the company for
13 providing customers with first call on generating capacity. It was intended to
14 compensate Duke for the lost opportunity costs associated with foregoing selling
15 its generation into the market at potentially higher costs.

16 In its ESP application, the company is proposing to continue Rider IMF, but
17 rename it Rider SRA-CD. Mr. Smith testifies that Rider SRA-CD is intended to
18 compensate the company for the value of dedicating its legacy generating assets
19 to serve SSO load. If Rider SRA-CD is providing compensation to the company
20 for lost opportunity costs associated with dedicating its legacy assets, then the \$9
21 per MWh increase is duplicative and inappropriate.

1 **VI. SRA RIDERS**

2 **Q23. Can you describe the System Resource Adequacy charge?**

3 A23. The company has proposed several riders to collect the costs associated with
4 maintaining a 15% planning reserve margin for all customers, both shopping and
5 non-shopping. These riders are associated with market capacity purchase (Rider
6 SRA-SRT), capacity dedication (Rider SRA-CD) and newly dedicated capacity
7 (Rider SRA-NDC). The company has proposed that the charges associated with
8 these riders be unavoidable.

9 **Q24. Do you have any recommendations regarding these riders?**

10 A24. Yes. To the extent the Commission approves these riders, in whole or in part, it
11 should require that the riders be avoidable by shopping customers. Alternatively,
12 if the riders are not avoidable, then shopping customers should be able to point
13 to the capacity assets held or under contract to Duke for the purposes of
14 satisfying MISO's planning reserve requirements.

15 **VII. ELECTRONIC BULLETIN BOARD**

16 **Q25. Has the company proposed developing an electronic bulletin board**
17 **("EBB") as part of its application?**

18 A25. Yes.

19 **Q26. How will the EBB be used?**

20 A26. The EBB will be used by both competitive retail electric suppliers, at their option,
21 as well as the company, to post market-based generation supply offers.

1 **Q27. What will the EBB cost and how are those costs treated?**

2 A27. The costs of the EBB are not known at this time. The company has estimated
3 the development costs at \$9 million. The company is proposing to recover costs
4 associated with the EBB through its distribution infrastructure modernization rider
5 (Rider DR-IM).

6 **Q28. Do you have any recommendations on the EBB?**

7 A28. I recommend the Commission not approve the EBB. The EBB will be used as a
8 marketing tool for competitive generation supply offers. However, the company
9 has proposed to recover the EBB costs through a distribution cost rider. This is
10 an improper subsidy flowing from a regulated service to a non-regulated service.

11 **Q29. Would collecting the EBB costs through a generation-related charge**
12 **change your recommendation?**

13 A29. No. I would still recommend the Commission not approve the EBB. Customers
14 should not be forced to underwrite marketing costs for competitive services.
15 These types of marketing costs should be recovered in the prices competitive
16 suppliers charge their customers for the goods and services they provide. If the
17 company is permitted to develop the EBB, then any costs should be recovered
18 only from those suppliers that actually use the EBB. This will not only align the
19 costs with cost causation, but will make suppliers have some skin in the game
20 relative to managing overall EBB costs. As proposed by the company,
21 customers are being asked to sign a blank check associated with EBB costs.
22 Putting the company and suppliers at risk for EBB costs will help ensure that
23 these costs are held to reasonable levels.

1 **VIII. NEWLY DEDICATED CAPACITY**

2 **Q30. Has the company proposed to acquire newly dedicated capacity?**

3 A30. Yes. As part of its application, the company is requesting approval of the need to
4 acquire up to approximately 1,400 MW of additional capacity. The company has
5 issued a request for proposals seeking offers to sell or build capacity. The
6 company is proposing to acquire ownership or contractual entitlements for the life
7 of the assets, and recover the associated costs through Rider SRA-NDC, which
8 would be unavoidable.

9 **Q31. Do you have any recommendations regarding this aspect of the company's**
10 **application?**

11 A31. It is my understanding that before an EDU may be authorized to impose a
12 surcharge associated with a newly owned or constructed generating facility, the
13 EDU must both dedicate the capacity and energy, as well as the rate associated
14 with the cost of the facility. The company's application addresses how the
15 capacity of the facility would be treated, but does not address the treatment of
16 the energy and the rate. Therefore, additional information is necessary to
17 evaluate this element of the company's application.

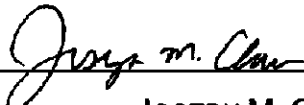
18 **IX. CONCLUSION**

19 **Q32. Does that conclude your testimony?**

20 A32. Yes, it does. However, I reserve the right to submit supplemental testimony.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing *Direct Testimony of Kevin M. Murray on Behalf of Industrial Energy Users-Ohio* was served upon the following parties of record this 27th day of October 2008, via electronic transmission, hand-delivery or first class mail, postage prepaid.


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ON BEHALF OF OHIO MANUFACTURERS ASSOC.

Table 8.10 Average Retail Prices of Electricity, 1960-2007
(Cents per Kilowatthour, Including Taxes)

Year	Residential ¹		Commercial ²		Industrial ³		Transportation ⁴		Other ⁵		Total	
	Nominal ⁶	Real ⁷	Nominal ⁶	Real ⁷	Nominal ⁶	Real ⁷	Nominal ⁶	Real ⁷	Nominal ⁶	Real ⁷	Nominal ⁶	Real ⁷
1960	2.6	12.4	2.4	11.4	1.1	5.2	NA	NA	1.9	9	1.8	8.6
1961	2.6	12.2	2.4	11.3	1.1	5.2	NA	NA	1.8	8.5	1.8	8.5
1962	2.6	12.1	2.4	11.1	1.1	5.1	NA	NA	1.9	8.8	1.8	8.4
1963	2.5	11.5	2.3	10.6	1	4.6	NA	NA	1.8	8.3	1.8	8.3
1964	2.5	11.3	2.2	9.8	1	4.5	NA	NA	1.8	8.1	1.7	7.7
1965	2.4	10.7	2.2	9.8	1	4.4	NA	NA	1.8	8	1.7	7.6
1966	2.3	9.8	2.1	9.1	1	4.3	NA	NA	1.8	7.8	1.7	7.3
1967	2.3	9.6	2.1	8.8	1	4.2	NA	NA	1.8	7.5	1.7	7.1
1968	2.3	9.2	2.1	8.4	1	4	NA	NA	1.8	7.2	1.6	6.4
1969	2.2	8.4	2.1	8	1	3.8	NA	NA	1.7	6.5	1.6	6.1
1970	2.2	8	2.1	7.6	1	3.6	NA	NA	1.6	6.5	1.7	6.2
1971	2.3	8	2.2	7.6	1.1	3.8	NA	NA	1.9	6.6	1.8	6.2
1972	2.4	8	2.3	7.6	1.2	4	NA	NA	2	6.6	1.9	6.3
1973	2.5	7.9	2.4	7.5	1.3	4.1	NA	NA	2.1	6.6	2	6.3
1974	3.1	8.9	3	8.6	1.7	4.9	NA	NA	2.8	8.1	2.5	7.2
1975	3.5	9.2	3.5	9.2	2.1	5.5	NA	NA	3.1	8.2	2.9	7.6
1976	3.7	9.2	3.7	9.2	2.2	5.5	NA	NA	3.3	8.2	3.1	7.7
1977	4.1	9.6	4.1	9.6	2.5	5.9	NA	NA	3.5	8.2	3.4	8
1978	4.3	9.4	4.4	9.6	2.6	6.1	NA	NA	3.6	7.9	3.7	8.1
1979	4.6	9.3	4.7	9.5	3.1	6.3	NA	NA	4	8.1	4	8.1
1980	5.4	10	5.5	10.2	3.7	6.8	NA	NA	4.8	8.9	4.7	8.7
1981	6.2	10.5	6.3	10.7	4.3	7.3	NA	NA	5.3	9	5.5	8.3
1982	6.9	11	6.9	11	5	8	NA	NA	5.9	9.4	6.1	9.7
1983	7.2	11	7	10.7	5	7.7	NA	NA	6.4	9.6	6.3	9.7
1984	7.15	10.57	7.13	10.54	4.83	7.14	NA	NA	5.9	8.72	6.25	9.24
1985	7.38	10.6	7.27	10.43	4.97	7.13	NA	NA	6.09	8.74	6.44	9.24
1986	7.42	10.41	7.2	10.11	4.83	6.92	NA	NA	6.11	8.66	6.44	9.04
1987	7.45	10.16	7.06	9.67	4.77	6.52	NA	NA	6.21	8.48	6.37	8.7
1988	7.48	9.88	7.04	9.3	4.7	6.21	NA	NA	6.2	8.19	6.35	8.36
1989	7.66	9.74	7.2	9.17	4.72	6.01	NA	NA	6.25	7.96	6.45	8.21
1990	7.83	9.6	7.34	9	4.74	5.81	NA	NA	6.4	7.84	6.57	8.06
1991	8.04	9.52	7.53	8.92	4.83	5.72	NA	NA	6.51	7.71	6.75	7.96
1992	8.21	9.5	7.66	8.87	4.83	5.59	NA	NA	6.74	7.8	6.82	7.86
1993	8.32	9.41	7.74	8.76	4.85	5.49	NA	NA	6.86	7.76	6.93	7.64
1994	8.38	9.28	7.73	8.56	4.77	5.28	NA	NA	6.84	7.58	6.91	7.66
1995	8.4	9.12	7.69	8.35	4.66	5.06	NA	NA	6.88	7.47	6.89	7.48
1996	8.36	8.91	7.64	8.14	4.6	4.9	NA	NA	6.91	7.36	6.86	7.31
1997	8.43	8.64	7.59	7.95	4.53	4.75	NA	NA	6.91	7.24	6.85	7.18
1998	8.26	8.56	7.41	7.68	4.48	4.64	NA	NA	6.83	6.87	6.74	6.95
1999	8.16	8.34	7.26	7.42	4.43	4.53	NA	NA	6.35	6.49	6.64	6.78
2000	8.24	8.24	7.43	7.43	4.64	4.64	NA	NA	6.56	6.56	6.81	6.81
2001	8.58	8.38	7.92	7.73	5.05	4.93	NA	NA	7.2	7.03	7.29	7.12
2002	8.44	8.1	7.89	7.57	4.88	4.68	NA	NA	6.75	6.48	7.2	6.91
2003	8.72	8.2	8.03	7.55	5.11	4.8	7.54	7.06	--	--	7.44	6.99
2004	8.95	8.18	8.17	7.48 [R]	5.26	4.8	7.16	6.56	--	--	7.61	6.96
2005	9.45	8.36 [R]	8.87	7.87 [R]	5.73	5.07 [R]	8.57	7.56 [R]	--	--	8.14	7.2 [R]
2006	10.4	8.92 [R]	9.46 [R]	8.12 [R]	6.16 [R]	5.28 [R]	9.54 [R]	8.16 [R]	--	--	8.9 [R]	7.64 [R]
2007*	10.64	8.89	9.67	8.08	6.36	5.31	10.4	8.98	--	--	9.14	7.64

¹Commercial sector. For 1990-2002, prices exclude public street and highway lighting, interdepartmental sales, and other sales to public authorities.

²Industrial sector. For 1960-2002, prices exclude agriculture and irrigation.

³Transportation sector, including railroads and railways.

⁴Public street and highway lighting, interdepartmental sales, other sales to public authorities, agriculture and irrigation, and transportation including railroads and railways.

⁵See "Nominal Dollars" in Glossary.

⁶In chained (2000) dollars, calculated by using gross domestic product implicit price deflators in Table D1. See "Chained Dollars" in Glossary.

⁷R=Revised, P=Preliminary. NA=Not available. □ □ = Not applicable.

Notes: □□Beginning in 2003, the category "Other" has been replaced by "Transportation," and the categories "Commercial" and "Industrial" have been redefined. □□Data represent revenue from electricity retail sales divided by electricity retail sales. □□Prices include State and local taxes, energy or demand charges, customer service charges, environmental surcharges, franchise fees, fuel adjustments, and other miscellaneous charges applied to end-use customers during normal billing operations. Prices do not include deferred charges, credits, or other adjustments, such as fuel or revenue from purchased power, from previous reporting periods. □□Through 1979, data are for Classes A and B privately owned electric utilities only. For 1980-1982, data are for selected Class A utilities whose electric operating revenues were \$100 million or more during the previous year. For 1983, data are for a selected sample of electric utilities. Beginning in 1984, data are for a census of electric utilities. Beginning in 1996, data also include energy service providers selling to retail customers.

Web Page: For related information, see <http://www.eia.doe.gov/fuel/electric.html>.

Sources: □□1960-September 1977 □ Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." □□October 1977-February 1980 □ Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income."

□□March 1980-1982 □ FERC, Form FERC-5, "Electric Utility Company Monthly Statement."

□□1983 □ Energy Information Administration (EIA), Form EIA-825, "Electric Utility Company Monthly Statement." □□1984-1992 □ EIA, Form EIA-861, "Annual Electric Utility Report." □□1993 forward □ EIA, *Electric Power Monthly* (March 2006), Table 5.3.

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Table 8.2. Average Power Plant Operating Expenses for Major U.S. Investor-Owned Electric Utilities, 1995 through 2006
(Mills per Kilowatthour)

Plant Type	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995
Operation												
Nuclear	8.93	8.39	8.3	8.86	8.54	8.3	8.41	8.93	9.98	11.02	9.47	9.43
Fossil Steam	3.23	2.97	2.5	2.68	2.54	2.4	2.31	2.21	2.17	2.22	2.25	2.38
Hydroelectric ^[1]	5.11	5.26	5.05	4.5	5.07	5.79	4.74	4.17	3.85	3.29	3.87	3.69
Gas Turbine and Small ^[2]	3	2.97	2.73	2.76	2.72	3.15	4.57	5.16	3.85	4.43	5.08	3.57
Scale^[2]												
Nuclear	5.68	5.23	5.38	5.23	5.04	5.01	4.93	5.13	5.79	6.9	5.68	5.21
Fossil Steam	3.19	2.56	2.96	2.73	2.68	2.61	2.45	2.38	2.41	2.43	2.49	2.65
Hydroelectric ^[1]	3.44	3.6	3.64	3.01	3.58	3.97	2.99	2.6	2	2.49	2.08	2.19
Gas Turbine and Small Scale ^[2]	2.79	2.15	2.16	2.26	2.38	3.33	3.5	4.8	3.43	3.43	4.98	4.28
Total												
Nuclear	4.85	4.54	4.58	4.6	4.6	4.67	4.95	5.17	5.39	5.42	5.5	5.75
Fossil Steam	23.17	21.77	18.21	17.35	16.11	18.13	17.69	15.62	15.94	16.8	16.51	16.07
Hydroelectric ^[1]	--	--	--	--	--	--	--	--	--	--	--	--
Gas Turbine and Small Scale ^[2]	52.46	53.73	45.2	43.91	31.82	43.56	39.19	28.72	23.02	24.94	30.58	20.83
Total												
Nuclear	19.46	18.16	18.26	18.69	18.18	17.96	18.28	19.23	21.16	23.33	20.65	20.39
Fossil Steam	29.59	27.69	23.85	22.59	21.32	23.14	22.44	20.22	20.52	21.45	21.25	21.11
Hydroelectric ^[1]	8.54	8.86	8.69	7.51	8.65	9.76	7.73	6.77	5.86	5.78	5.95	5.89
Gas Turbine and Small Scale ^[2]	57.75	58.85	50.1	48.93	36.93	50.04	47.26	38.68	30.3	32.8	40.64	28.67

[1] Conventional hydro and pumped storage.

[2] Gas turbine, internal combustion, photovoltaic, and wind plants.

Notes: • Expenses are average expenses weighted by net generation. • A mill is a monetary cost and billing unit equal to 1/1000 of the U.S. dollar (equivalent to 1/10 of one cent). • Totals Source: Federal Energy Regulatory Commission, FERC Form 1, "Annual Report of Major Electric Utilities, Licensees and Others."